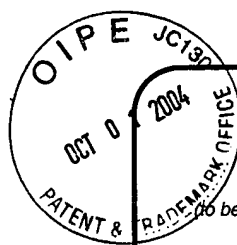


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# TRANSMITTAL FORM

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Application Number	08/869,589	
	Filing Date	June 5, 1997
	First Named Inventor	Strolle
	Art Unit	2631
Examiner Name	Kevin M. Burd	
Total Number of Pages in This Submission	Attorney Docket Number	SAR 12082

## ENCLOSURES (check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) ____	<input type="checkbox"/> After Allowance Communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
<div>Remarks</div>		

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Kin-Wah Tong - Reg. No. 39,400 Moser, Patterson & Sheridan LLP		
Signature			
Date	September 29, 2004		

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# FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 330

## Complete if Known

Application Number 08/869,589  
Filing Date 6/5/97  
First Named Inventor Strolle  
Examiner Name K. Burd  
Art Unit 2631  
Attorney Docket No. SAR 12082

## METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money ☐ Other ☐ None  
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☒ Deposit Account:

Deposit  
Account  
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The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments  
☒ Charge any additional fee(s) or any underpayment of fee(s)  
☐ Charge fee(s) indicated below, except for the filing fee  
to the above-identified deposit account.

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1)

(\$ 0)

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims	Fee from below	Fee Paid
Total Claims	-20 **	= 0	X	= 0
Independent Claims	-3 **	= 0	X	= 0
Multiple Dependent			X	= 0

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2)

(\$ 0)

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3)

(\$ 330)

## SUBMITTED BY

Name (Print/Type) Kin-Wah Tong  
Registration No. (Attorney/Agent) 39,400  
Telephone (732) 530-9404  
Signature *[Signature]* Date 9/29/04

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PATENT  
Atty. Dkt. No. SAR 12082

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE  
BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of: Strolle

Serial No.: 08/869,589

Confirmation No.: 5936

Filed: June 5, 1997

For: METHOD AND APPARATUS  
FOR PERFORMING  
BANDEDGE EQUALIZATION

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Group Art Unit: 2631

Examiner: Burd, Kevin M.

MAIL STOP APPEAL BRIEF - PATENTS  
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Alexandria, VA 22313-1450

CERTIFICATE OF MAILING 37 CFR 1.8	
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Date 9/29/04	Signature Janet Kondrak

Dear Sir:

**APPEAL BRIEF**

Applicants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2631 dated April 27, 2004, finally rejecting claims 1, 9, 10, 12, 15, and 16. Please charge the fee of \$330.00 for filing this brief to Deposit Account No. 20-0782.

10/04/2004 CCHAU1 00000040 200782 08869589  
01 FC:1402 330.00 DA

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### **Real Party in Interest**

The real party in interest is the Sarnoff Corporation.

### **Related Appeals and Interferences**

A Decision on Appeal dated February 11, 2004 (Appeal No. 2002-1376) was entered for the present Application (Application No. 08/869,589). Appellant asserts that no other appeals or interferences are known to the Appellant, the Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

### **Status of Claims**

Claims 1-16 are pending in the application. Claims 1-16 were originally presented in the application. Claims 1, 9, 10, 12, 15, and 16 stand rejected in view of Norrell et al. (U.S. Patent No. 5,793,821, issued April 11, 1998) as discussed below. The rejection of claims 1, 9, 10, 12, 15, and 16 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

### **Status of Amendments**

A first amendment was filed on July 30, 1999 to overcome a first Office Action dated April 23, 1999. In the first Office Action, the Examiner rejected claims 1, 6-8, 9-10, 12 and 15-16, under 35 U.S.C. § 103 and 112. No claims were rejected under 35 U.S.C. § 102. The Examiner allowed claim 11, and identified claims 2-5 and 13-14 as containing allowable subject matter but dependent upon a rejected base claim. In reply to the first Office Action, the Appellant filed a first response with arguments directed to traverse the Examiner's rejections. No changes were made to claims 1-16.

The Examiner responded to Appellant's July 30, 1999 first amendment in a second Office Action dated August 24, 1999. In the second Office Action, the Examiner cited a new reference to reject claims 1, 9-10, 12 and 15-16 under 35 U.S.C. § 103. No claims were rejected under 35 U.S.C. § 102. The status of claims 2-5, 11 and 13-14 remained unchanged. Claims 6-8 were identified as containing allowable subject matter, but these claims were dependent upon a rejected base claim.

A second response was filed on November 23, 1999 to overcome the second Office Action. The second response included arguments directed to traverse the Examiner's rejections in the second Office Action. No changes were made to claims 1-16.

The Examiner responded to Appellant's November 23, 1999 third response in a third Office Action dated February 18, 2000. In the third Office Action, the Examiner cited a new reference to reject claims 1, 9-10, 12 and 15-16 under 35 U.S.C. § 102. Additionally, the Examiner cited another new reference to reject claims 1, 9-10, 12 and 15-16 under 35 U.S.C. § 103. The status of claims 2-8, 11 and 13-14 remained unchanged.

A third response was filed to overcome the third Office Action, on May 5, 2000. The third response included arguments directed to traverse the Examiner's rejections in the third Office Action. No changes were made to claims 1-16.

The Examiner responded to Appellant's May 5, 2000 third response with a Final Office Action dated July 10, 2000. In the Final Office Action, the Examiner considered Appellant's arguments for claims 1, 9-10, 12 and 15-16, but the Examiner did not find



the Appellant's arguments to be persuasive. The Examiner reiterated the rejection of claims 1, 9-10, 12 and 15-16. The status of claims 2-8, 11 and 13-14 remained unchanged.

An Examiner Interview was conducted on August 31, 2000, where the Examiner, the Primary Examiner and Appellant's representative tentatively reached an agreement. However, the Examiner indicated that a review of the references was necessary prior to any final decision. The Examiner restated this position in an Interview Summary mailed September 13, 2000.

An amendment after Final Office Action under 37 C.F.R. § 1.116 was filed on September 7, 2000. The amendment included arguments to traverse the Examiner's 35 U.S.C. § 102 and 103 rejections in the Final Office Action. No changes were made to claims 1-16.

The Examiner responded to Appellant's amendment after Final Office Action with an Advisory Action. In the Advisory Action, the Examiner sustained the rejection of claims 1, 9-10, 12 and 15-16 under 35 U.S.C. § 102, but withdrew the rejection of claims 1, 9-10, 12 and 15-16 under 35 U.S.C. § 103. The status of claims 2-8, 11 and 13-14 remained unchanged as containing allowable subject matter.

The Appellants appealed the rejection of claims 1, 9-10, 12, and 15-16 under 35 U.S.C. § 102 on December 4, 2000. A Decision on Appeal dated February 11, 2004, by the Board of Patent Appeals and Interferences ("the Board") affirmed the rejection of claims 1, 9-10, 12, and 15-16 under 35 U.S.C. § 102. The Board also objected to claims 2-8, 13, and 14 and allowed claim 11.

A Request for Continued Examination (RCE) was filed by the Appellants on April 1, 2004. In the Submission under 37 C.F.R. § 1.114, the Appellants amended claims 1, 2, 12, and 13. Claims 2 and 13 were amended to place them in independent form.

The Examiner responded to Appellant's April 1, 2004 Submission with a Final Office Action dated April 27, 2004. In the Final Office Action, the Examiner considered Appellant's amendments to claims 1 and 12, and arguments for claims 1, 9-10, 12 and 15-16, but the Examiner did not find the Appellant's arguments to be persuasive. The Examiner reiterated the rejection of claims 1, 9-10, 12 and 15-16. In rejecting the

Appellant's claims, the Examiner cited dicta from the Decision on Appeal. Claims 2-8, 11, 13, and 14 were allowed by the Examiner.

## **Summary of Claimed Subject Matter**

The present invention is an apparatus and method for equalizing the amplitude of bandedges of a broadband signal. Specifically, the apparatus comprises a pre-equalizer, a bandedge filter and a bandedge signal processor. The pre-equalizer adjusts the bandedges of the broadband signal in response to a control signal generated from the bandedge signal processor such that the amplitudes of the bandedges are made equal.

The bandedge filter extracts a bandedge signal from the broadband signal. An example of the bandedge signal is a double sideband, amplitude modulated signal containing symbol timing information. The bandedge signal processor generates a control signal in response to the bandedge signal. In one embodiment, the bandedge signal processor generates the control signal by determining the difference between the amplitude of the upper and lower bandedges, and low-pass filtering the difference. The control signal is then applied to the pre-equalizer.

The equalization of the amplitudes of the bandedges of a broadband signal allows a bandedge timing recovery circuit to produce substantially jitter-free or stress-free timing signals. Otherwise, if the bandedges of the broadband signal are not made equal, as in prior art, the bandedge timing recovery circuit may no longer produce timing signals in a jitter-free manner.

The Appellant will now summarize independent claims 1 and 12, and specify where support can be found in the specification and drawings, if any. It should be understood that the appealed claims may read on other portions of the specification or other figures that are not listed below.

In one embodiment of the invention, the apparatus operates as a bandedge equalizer (116). More specifically, the apparatus comprises a pre-equalizer (300, 302) for adjusting the amplitudes of the bandedges of a broadband signal in response to a control signal such that the amplitudes of the band edges are made equal. (See Appellant's specification, page 5, lines 15-17, page 6, lines 22-24, and page 6, line 26 – page 7, line 3) The apparatus also comprises a bandedge filter (312, 314), connected

to the pre-equalizer, for extracting a bandedge signal from the broadband signal. (See Appellant's specification, page 5, lines 20-31) The apparatus also comprises a bandedge signal processor (315), connected to the bandedge filter, for generating the control signal in response to the bandedge signal. (See Appellant's specification, page 5, line 34 to page 6, line 25)

For the convenience of the Board of Patent Appeals and Interferences, Appellant's claims 1, 9, 10, 12, 15, and 16 are presented below in claim format with elements read on FIG. 2 of the drawings and appropriate citations to at least one portion of the specification for each element of the appealed claims.

Claim 1 positively recites (with reference numerals, where applicable, and cites to at least one portion of the specification added):

1. Apparatus for equalizing the amplitudes of the bandedges of a broadband signal comprising:
  - a pre-equalizer (300, 302) for adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal; (See Appellant's specification, page 5, lines 15-17, page 6, lines 22-24, and page 6, line 26 – page 7, line 3)
  - a bandedge filter (312, 314), connected to said pre-equalizer, for extracting a bandedge signal from said broadband signal; and (See Appellant's specification, page 5, lines 20-31)
  - a bandedge signal processor (315), connected to said bandedge filter, for generating said control signal in response to said bandedge signal. (See Appellant's specification, page 5, line 34 to page 6, line 25)

Claim 9 positively recites (with reference numerals, where applicable, and cites to at least one portion of the specification added):

9. The apparatus of claim 1 wherein the pre-equalizer attenuates a particular bandedge of said broadband signal in response to said control signal. (See Appellant's specification, page 6, line 26 – page 7, line 3)

Claim 10 positively recites (with reference numerals, where applicable, and cites to at least one portion of the specification added):

10. The apparatus of claim 1 wherein the pre-equalizer amplifies a particular bandedge of said broadband signal in response to said control signal. (See Appellant's specification, page 6, line 26 – page 7, line 3)

Claim 12 positively recites (with reference numerals, where applicable, and cites to at least one portion of the specification added):

12. A method of equalizing the amplitudes of the bandedges of a broadband signal comprising the steps of:
  - adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal; (See Appellant's specification, page 5, lines 15-17, page 6, lines 22-24, and page 6, line 26 – page 7, line 3)
  - extracting a bandedge signal from said broadband signal; and (See Appellant's specification, page 5, lines 20-31)
  - generating said control signal in response to said bandedge signal. (See Appellant's specification, page 5, line 34 to page 6, line 25)

Claim 15 positively recites (with reference numerals, where applicable, and cites to at least one portion of the specification added):

15. The method of claim 12 wherein said adjusting step comprises the step of attenuating a particular bandedge of said broadband signal in response to said control signal. (See Appellant's specification, page 6, line 26 – page 7, line 3)

Claim 16 positively recites (with reference numerals, where applicable, and cites to at least one portion of the specification added):

16. The method of claim 12 wherein said adjusting step comprises the step of amplifying a particular bandedge of said broadband signal in response to said control signal. (See Appellant's specification, page 6, line 26 – page 7, line 3)

**Ground of Rejection to be Reviewed on Appeal**

Claims 1, 9, 10, 12, 15, and 16 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Norrell et al. (U.S. Patent No. 5,793,821, issued April 11, 1998).

## **ARGUMENT**

**I. THE EXAMINER ERRED IN REJECTING CLAIMS 1, 9, 10, 12, 15, AND 16 BECAUSE THE CITED REFERENCE FAILS TO TEACH, SHOW, OR SUGGEST A PRE-EQUALIZER FOR ADJUSTING THE AMPLITUDES OF THE BANDEDGES OF A BROADBAND SIGNAL IN RESPONSE TO A CONTROL SIGNAL SUCH THAT THE AMPLITUDES OF THE BANDEDGES ARE MADE EQUAL.**

**A. 35 U.S.C. § 102 - Claim 1.**

The Examiner rejected claim 1 in Paragraph 4 of the Final Office Action dated April 27, 2004 as being anticipated by the Norrell et al. reference (United States patent no. 5,793,821, issued August 11, 1998) (hereinafter Norrell). The rejection is respectfully traversed.

In the prior Decision on Appeal, the Board deemed that Norrell's method and apparatus for compensating for amplitude distortion in an entire broadband signal will result in compensation (adjustment) of the bandedges that are part of the signal. Thus, some of the prior claims of Appellant's application were found unpatentable in view of Norrell et al. The Appellant amended the claims to specifically recite that the Appellant's invention causes the amplitudes of the bandedges to be equal. In short, Norrell et al. does not specifically teach that the bandedges are to have equal amplitudes.

However, in the Board's prior decision, the Board made the statement that "Amplitude equalization means attenuating or amplifying to make amplitudes equal." (Decision on Appeal, page 8, lines 3-4) This dicta has been used by the Examiner, as discussed below, as the basis for rejecting the Appellant's current claims. The Appellant argues below that Norrell et al. does not teach or suggest a method or apparatus that makes the amplitude of each bandedge equal. As such, the Appellant requests that the Board clarify their prior decision in view of the Appellant's amended claims and agree that Norrell et al. does not teach making the bandedge amplitudes equal.

Specifically, the Examiner alleged that:

"Regarding claims 1 and 12, Norrell et al (Norrell) disclose an apparatus for equalizing the amplitudes of a signal (column 7 line 65 to column 8 line 2). The apparatus includes a timing interpolating filter (figure 5, item 504) for providing samples for the upper and lower bandedge filters (column 8, lines 7-14) and a delay line (figure 5, item 506) which is part of the modem receiver's adaptive equalizer (column 9, lines 34-35) where the delay line is long enough to compensate for the amplitude and delay distortion in general, it is long enough to compensate for the differential delay distortion at a particular pair of frequencies (column 9 lines 43-48). Upper and lower bandedge filters are disclosed in figure 5, items 508 and 512. A signal processor (figure 5 item 518-530 and column 8 lines 50-67) provides a control signal to the filters to remove noise and interference to compensate for the amplitude distortions. The decision on appeal filed 2/11/2004 states "We previously found in connection with claims 1 and 12 that Norrell discloses amplitude equalization of the bandedges. Amplitude equalization means attenuating or amplifying to make the amplitudes equal."

In terms of the Appellant's invention, the Examiner has equated the items 504 and 506 (the interpolating filter and the delay line) of Norrell et al. (hereinafter Norrell) with Appellant's pre-equalizer. Additionally, the Examiner has equated items 508 and 512 of Norrell with Appellant's bandedge filter, and has equated items 518-530 of Norrell with Appellant's bandedge signal processor.

The Examiner's interpretation of the teachings of Norrell is simply incorrect. The Board's attention is called to the fact that Norrell does not teach a pre-equalizer for adjusting the amplitudes of the bandedges of the broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal, as recited in Appellant's independent claim 1. Specifically, Appellant's claim 1 positively recites:

1. Apparatus for equalizing the amplitudes of the bandedges of a broadband signal comprising:
  - a pre-equalizer for adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal;
  - a bandedge filter, connected to said pre-equalizer, for extracting a bandedge signal from said broadband signal; and
  - a bandedge signal processor, connected to said bandedge filter, for generating said control signal in response to said bandedge signal. (emphasis added)



The Board is directed to the fact that the cited reference, Norrell, fails to teach the first limitation, i.e., pre-equalizer, in claim 1 of Appellant's invention. For prior art to anticipate under 35 U.S.C. § 102, every element of the claimed invention must be identically disclosed in a single reference. See Corning Glass Works v. Sumitomo Electronic, 9 U.S.P.Q. 2d 1962, 1965 (Fed Cir. 1989). The exclusion of a claimed element, no matter how insubstantial or obvious, from a prior art reference is enough to negate anticipation. See Connell v. Sears, Roebuck & Co., 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983). For the reasons provided below, Norrell clearly fails to identically disclose each and every limitation of claim 1 as required in Corning and Connell.

The Examiner initially alleged, in Paragraph 4 of the Final Office Action dated April 27, 2004, that Norrell's "timing interpolating filter (figure 5, item 504) for providing samples for the upper and lower bandedge filters (column 8, lines 7-14)" teaches Appellant's pre-equalizer for adjusting the amplitudes of the bandedges of a broadband signal. The Examiner further alleged, in Paragraph 4 of the Final Office Action, that the timing interpolating filter and "a delay line (figure 5, item 506) which is part of the modem receiver's adaptive equalizer (column 9, lines 34-35) where the delay line is long enough to compensate for the amplitude and delay distortion in general, it is long enough to compensate for the differential delay distortion at a particular pair of frequencies (column 9 lines 43-48)" teaches Appellant's pre-equalizer. The Appellant respectfully disagrees.

Norrell teaches a timing interpolation filter (figure 5, item 504) to generate an output signal at 2 samples per symbol (See Norrell., column 8, lines 5-7). These samples are received at the equalizer delay line of Norrell et al. (figure 5, item 506), which implements a time delay of the samples for the upper band edge filter (UBEF, Norrell, figure 5, item 508) and the lower band edge filter (LBEF, Norrell, figure 5, item 512). As such, the cited sections of Norrell (column 8, lines 7-14, and figure 5, items 504 and 506) merely compensate for differential delay distortion between the upper and lower bandedges. (Also see Norrell, column 7, lines 65-67) Furthermore, Norrell at col 7, lines 41-59 discusses the importance of compensating for time delay distortion to produce a "timing envelope". Such compensation of time delay differences between upper and lower bandedge frequencies is totally devoid of any teaching of adjusting

amplitudes of bandedges of any signal to make the bandedges equal, much less a broadband signal, as in claim 1 of Appellant's invention. Norrell does not address the timing errors associated with an imbalance in the amplitudes of the bandedges.

As an example of compensating for differential delay distortion Norrell considers the situation where the communications channel delays the lower bandedge more than the higher bandedge by 12 sample intervals. (See Norrell, column 8, lines 15-18) To compensate for this delay distortion, the sample delay line (figure 5, item 506) introduces a larger delay to the higher bandedge, such that the time delay is for the lower and upper bandedges are equalized, i.e., no time delay difference between the lower and upper bandedges. (See Norrell, column 8, lines 22-24) This is clearly time delay equalization and not amplitude equalization that would make the bandedge amplitudes equal. As such, the LBEF for the lower bandedge uses the most recent samples, while the UBEF for the upper bandedge uses more delayed samples. (See Norrell, column 8, lines 18-22) For example, the LBEF uses samples  $x(0) - x(8)$  and the UBEF uses samples  $x(12) - x(20)$ , where the larger index represents more delayed samples.

To the extent Norrell compensates for amplitude distortion, the LBEF and the UBEF sharply attenuates the energy at the "midband" or the center of the band between the lower and upper bandedges, because the midband does not contain any timing information. (See Norrell, column 9, lines 5-8) However, Norrell merely passes the energy in regions centered at the lower and upper bandedges to the complex summing node for further processing in the timing system. (See Norrell, column 9, lines 2-5) Thus, Norrell does not teach using a control signal to actively adjust the amplitudes of bandedges of a broadband signal such that the amplitudes of the bandedges are made equal as in claim 1 of Appellant's invention.

The cited section (Norrell, column 9, lines 43-48) is directed to the amplitude compensation by the LBEF and the UBEF only after the delay line equalizes the delay or compensates for the differences in delay between the lower and upper bandedges. The delay line ensures that the LBEF and the UBEF process a signal having the same delay at the lower and upper bandedges, or no timing distortion between the lower and upper bandedges. As such, the delay line only compensates for differential delay

distortion between the lower and upper bandedges. Once the delay distortion is compensated for, the LBEF and the UBEF performs amplitude compensation by sharply attenuating the region centered between the lower and upper bandedges. As previously discussed in this Section, such compensation of amplitude distortion does **not** use a control signal to adjust the amplitude of bandedges of a broadband signal such that the amplitudes of the bandedges are made equal as in claim 1 of Appellant's invention.

The cited section (Norrell, column 9, lines 11-15) is directed to channel equalization and **not** the specific adjustment of bandedges of a broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal. Channel equalization generally involves equalization of the entire frequency response and, as such, is **not** the same as adjusting bandedges such that the amplitudes of the bandedges are made equal. The purpose of the cited section was to clarify the advantage of sharply attenuating the midband, i.e., the region between the LBEF and the UBEF, in Norrell. Moreover, the cited section is devoid of any teaching of an adjustment of bandedges to make them have equal amplitude in response to a control signal, as generated by the bandedge filter and bandedge signal processor in Appellant's invention. Thus, the cited section does **not** teach the adjusting of amplitudes of the bandedges of a broadband signal such that the amplitudes of the bandedges are made equal as in claim 1 of Appellant's invention.

The Examiner, cited dicta from the Decision on Appeal in advancing the rejection of claim 1. The specific passage referred to by the Examiner reads as follows:

"We previously found in connection with claims 1 and 12 that Norrell discloses amplitude equalization of the bandedges. Amplitude equalization means attenuating or amplifying to make the amplitudes equal." (Decision on Appeal, page 8, lines 3-4)

Norrell teaches, as decided in the prior appeal, adjusting the amplitude of the original signal as a result of delay distortion compensation followed by bandedge filtering. The Decision on Appeal cites support for amplitude equalization of the original signal, including the bandedges in the following quote from Norrell: "[prior art] equalization boosts the desired energy near the bandedges, but also boosts the unwanted energy near the bandedges." (See Decision on Appeal, page 6) The

Examiner also provided support for an adjustment of the amplitude at the bandedges on page 9, lines 14-17 of the Examiner's Answer in the previous Appeal stating: "If the entire signal is compensated for amplitude distortion, the bandedges are a component of the original signal." Norrell teaches adjusting of the amplitude of the original signal, including the bandedges but nowhere does it teach specifically making the bandedge amplitudes equal.

Since Norrell et al. fails to teach "adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal", as recited in claim 1 of Appellant's invention, the Appellant respectfully submits that independent claim 1 is not anticipated by the teachings of Norrell and, as such, fully satisfies the requirements of 35 U.S.C. § 102 is patentable thereunder. Therefore, the Appellant respectfully submits that the Examiner's rejection of claim 1 is improper under both Corning and Conell.

B. 35 U.S.C. § 102 - Claim 9.

The Examiner has rejected claim 9, in Paragraph 4 of the third Office Action and Paragraph 4 of the Final Office Action dated April 27, 2004, as being anticipated by the Norrell et al. reference. The Appellant respectfully disagrees.

First, claim 9 depends indirectly from claim 1 and recites additional features therefor. Since Norrell et al. does not anticipate Appellant's invention as recited in Appellant's independent claim 1, dependent claim 9 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1.

Second, dependent claim 9 specifically recites the additional limitation wherein "the pre-equalizer attenuates a particular bandedge signal from said broadband signal in response to said control signal." This limitation defines a specific adjustment of a particular bandedge to make the amplitudes of the bandedges of a broadband signal equal.

In contrast, for the same reasons provided in Section A, Norrell fails to teach any adjusting of the amplitudes of the bandedges of a broadband signal such that the amplitudes of the bandedges are made equal, much less the attenuation of a particular bandedge to achieve equal amplitudes. Thus, Norrell also fails to anticipate Appellant's

invention as claimed in dependent claim 9. Therefore, the Appellant submits that claim 9, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

C. 35 U.S.C. § 102 - Claim 10.

The Examiner has rejected claim 10, in Paragraph 4 of the Final Office Action dated April 27, 2004, as being anticipated by the Norrell et al. reference. The Appellant respectfully disagrees.

First, claim 10 depends indirectly from claim 1 and recites additional features therefor. Since Norrell et al. does not anticipate Appellant's invention as recited in Appellant's independent claim 1, dependent claim 10 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1.

Second, dependent claim 10 specifically recites the additional limitation wherein "the pre-equalizer amplifies a particular bandedge signal from said broadband signal in response to said control signal." This limitation also defines a specific adjustment of a particular bandedge to make the amplitudes of the bandedges of a broadband signal equal.

In contrast, for the same reasons provided in Section A, Norrell fails to teach any adjusting of the amplitudes of the bandedges of a broadband signal, much less the amplification of a particular bandedge to achieve equal amplitudes. Thus, Norrell also fails to anticipate Appellant's invention as claimed in dependent claim 10. Therefore, the Appellant submits that claim 10, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

D. 35 U.S.C. § 102 - Claim 12.

The Examiner has rejected claim 12, in Paragraph 4 of the Final Office Action dated April 27, 2004, as being anticipated by the Norrell et al. reference. The Appellant respectfully disagrees.

Independent claim 12 is a method claim that recites limitations similar to those found in independent apparatus claim 1. Since Norrell et al. does not anticipate Appellant's invention as recited in Appellant's independent apparatus claim 1,

independent method claim 12 is also not anticipated and is allowable for at least the reasons stated in Section A.

More specifically, claim 12 recites "method for equalizing the amplitudes of the bandedges of a broadband signal comprising the step of adjusting the amplitudes of the bandedges of a broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal." Additionally, claim 12 recites the steps of "extracting a bandedge signal from said broadband signal" and "generating said control signal in response to said bandedge signal."

For at least the reasons provided in Section A, Norrell fails to teach the adjusting the amplitudes of the bandedges of a broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal. Therefore, the Appellant submits that claim 12, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

#### E. 35 U.S.C. § 102 - Claim 15.

The Examiner has rejected claim 15, in Paragraph 4 of the Final Office Action dated April 27, 2004, as being anticipated by the Norrell et al. reference. The Appellant respectfully disagrees.

First, claim 15 depends indirectly from claim 12 and recites additional features therefor. Since Norrell et al. does not anticipate Appellant's invention as recited in Appellant's independent claim 12, dependent claim 15 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 12.

Second, dependent claim 15 is a method claim that makes the bandedges of a broadband signal equal by reciting similar limitations as compared to dependent apparatus claim 9. Since Norrell et al. does not anticipate Appellant's invention as recited in Appellant's dependent apparatus claim 9, dependent method claim 15 is also not anticipated and is allowable for the same reason as stated above in Section B.

Third, claim 15 specifically recites that the additional limitation "wherein said adjusting step comprises the step of attenuating a particular bandedge of said broadband signal in response to said control signal such that the amplitudes of the bandedges are made equal." For the same reasons provided in Section B, Norrell fails

to teach the attenuation of a particular bandedge of a broadband signal. Therefore, the Appellant submits that claim 15, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

F. 35 U.S.C. § 102 - Claim 16.

The Examiner has rejected claim 16, in Paragraph 4 of the Final Office Action dated April 27, 2004, as being anticipated by the Norrell reference. The Appellant respectfully disagrees.

First, claim 16 depends directly from claim 12 and recites additional features therefor. Since Norrell does not anticipate Appellant's invention as recited in Appellant's independent claim 12, dependent claim 16 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 12.

Second, dependent claim 16 is a method claim that equalizes the amplitudes of the bandedges of a broadband signal by reciting similar limitations as compared to dependent apparatus claim 10. Since Norrell does not anticipate Appellant's invention as recited in Appellant's dependent apparatus claim 10, dependent method claim 16 is also not anticipated and is allowable for the same reason as stated above in Section C.

Third, claim 16 specifically recites the additional limitation "wherein said adjusting step comprises the step of amplifying a particular bandedge of said broadband signal in response to said control signal." For the same reasons provided in Section C, Norrell fails to teach the amplifying of a particular bandedge of a broadband signal. Therefore, the Appellant submits that claim 16, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

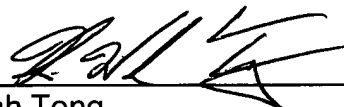
### Conclusion

Thus, the Appellants submits that none of the claims presently in the application are obvious under the provisions of 35 U.S.C. § 102. Consequently, the Appellants believes all these claims are presently in condition for allowance.

For the reasons advanced above, Appellants respectfully urge that the rejections of claims 1-38 as being obvious under 35 U.S.C. §102 are improper. Reversal of the rejections of the Final Office Action is respectfully requested.

Respectfully submitted,

9/29/04  
Date

  
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## CLAIMS APPENDIX

1. (Previously presented) Apparatus for equalizing the amplitudes of the bandedges of a broadband signal comprising:

a pre-equalizer for adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal;

a bandedge filter, connected to said pre-equalizer, for extracting a bandedge signal from said broadband signal; and

a bandedge signal processor, connected to said bandedge filter, for generating said control signal in response to said bandedge signal.

2. (Previously presented) Apparatus for equalizing the amplitudes of the bandedges of a broadband signal comprising:

a pre-equalizer for adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal;

a bandedge filter, connected to said pre-equalizer, for extracting a bandedge signal from said broadband signal; and

a bandedge signal processor, connected to said bandedge filter, for generating said control signal in response to said bandedge signal, wherein said bandedge signal processor comprises:

a first filter for producing a first bandedge signal from said bandedge signal;

a second filter for producing a second bandedge signal from said bandedge signal;

a first magnitude processor, connected to said first filter, for generating a first magnitude value representing the magnitude of said first bandedge signal; and

a second magnitude processor, connected to said second filter, for generating a second magnitude value representing the magnitude of said second bandedge signal.

3. (Original) The apparatus of claim 2 wherein said bandedge signal processor further comprises:

a subtractor, connected to said first and second magnitude processors, for producing a difference value representing the difference between said first and second magnitude values; and

a loop filter, connected to said subtractor, for generating said control signal from said difference value.

4. (Original) The apparatus of claim 2 wherein said first filter is a first Hilbert filter.

5. (Original) The apparatus of claim 2 wherein said second filter is a second Hilbert filter.

6. (Original) The apparatus of claim 5 wherein said first Hilbert filter has a form

$$\begin{bmatrix} 0 & 1 & 0 \\ -.5 & 0 & .5 \end{bmatrix}.$$

7. (Original) The apparatus of claim 5 wherein said second Hilbert filter has a form

$$\begin{bmatrix} 0 & 1 & 0 \\ .5 & 0 & -.5 \end{bmatrix}.$$

8. (Original) The apparatus of claim 1 wherein the pre-equalizer has the form

$$\begin{bmatrix} 0 & 1 & 0 \\ \alpha & 0 & -\alpha \end{bmatrix}, \text{ where } \alpha \text{ is a magnitude of the control signal.}$$

9. (Original) The apparatus of claim 1 wherein the pre-equalizer attenuates a particular bandedge of said broadband signal in response to said control signal.

10. (Original) The apparatus of claim 1 wherein the pre-equalizer amplifies a particular bandedge of said broadband signal in response to said control signal.

11. (Original) Apparatus for equalizing the amplitudes of the bandedges of a broadband signal comprising:

- a pre-equalizer for adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal;

- a bandedge filter, connected to said pre-equalizer, for extracting a bandedge signal from said broadband signal;

- a first Hilbert filter connected to said bandedge filter for producing a first bandedge signal from said bandedge signal;

- a second Hilbert filter connected to said bandedge filter for producing a second bandedge signal from said bandedge signal;

- a first magnitude processor, connected to said first Hilbert filter, for generating a first magnitude value representing the magnitude of said first bandedge signal; and

- a second magnitude processor, connected to said second Hilbert filter, for generating a second magnitude value representing the magnitude of said second bandedge signal

- a subtractor, connected to said first and second magnitude processors, for producing a difference value representing the difference between said first and second magnitude values; and

- a loop filter, connected to said subtractor, for generating said control signal from said difference value.

12. (Previously presented) A method of equalizing the amplitudes of the bandedges of a broadband signal comprising the steps of:

- adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal such that the amplitudes of the bandedges are made equal;

- extracting a bandedge signal from said broadband signal; and

- generating said control signal in response to said bandedge signal.

13. (Previously presented) A method of equalizing the amplitudes of the bandedges of a broadband signal comprising the steps of:

adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal;

extracting a bandedge signal from said broadband signal; and

generating said control signal in response to said bandedge signal, wherein said generating step further comprises the steps of:

producing a first bandedge signal from said bandedge signal;

producing a second bandedge signal from said bandedge signal;

generating a first magnitude value representing a magnitude of said first bandedge signal; and

generating a second magnitude value representing a magnitude of said second bandedge signal.

14. (Original) The method of claim 13 wherein said control signal generating step further comprises the steps of:

producing a difference value representing the difference between said first and second magnitude values; and

generating said control signal from said difference value.

15. (Original) The method of claim 12 wherein said adjusting step comprises the step of attenuating a particular bandedge of said broadband signal in response to said control signal.

16. (Original) The method of claim 12 wherein said adjusting step comprises the step of amplifying a particular bandedge of said broadband signal in response to said control

## EVIDENCE APPENDIX

None

## **RELATED PROCEEDINGS APPENDIX**

Decision on Appeal, dated February 11, 2004, Appeal No. 2002-1376, Application No. 08/869,589